

**AMENDMENT**

Serial Number: 10/786,340

Filing Date: February 25, 2004

Title: Method of Improving the Performance of Organic Coatings for Corrosion Resistance

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YOU101**REMARKS**

The Official Action mailed December 8, 2006 has been carefully considered. Claims 1-15 stand pending in the present application and stand rejected. Claims 1, 6 and 12 have been amended. Reconsideration and allowance of the subject application, as amended, are respectfully requested.

**Claim Amendments**

Claim 1 has been amended to recite: “forming a first solution consisting essentially of an organosulfur compound in a first solvent, mixing the first solution in which said organosulfur compound is dissolved with a second solution consisting essentially of said polymeric resins dissolved in a second solvent.” No new matter is believed to have been entered by this amendment.

Claim 6 has been amended to recite: “the group consisting of.” No new matter is believed to have been entered by this amendment. It is respectfully submitted that this amendment addresses the objection to the claim language.

Claim 8 has been amended to recite: “said first solvent”. No new matter is believed to have been entered by this amendment.

Claim 9 has been amended to recite: “said first solvent.” No new matter is believed to have been entered by this amendment.

Claim 12 has been amended to recite: “mixing an organosulfur compound with a polymeric resin, wherein said mixture consists essentially of said organosulfur compound and said polymeric resin.” No new matter is believed to have been entered by this amendment.

**Claim Rejections Under 35 USC §§ 102 and 103**

Claims 1-2, 5-8 and 12-15 stand rejected under 35 USC §102(b) as being anticipated by Kanai et al, WO99/42638 or U.S. Patent No. 6,607,587.

As an initial matter, claim 1 has been amended to recite: “A method of improving the performance of organic conversion coatings, whose primary ingredients are polymeric resins, comprising: a. forming a first solution consisting essentially of an organosulfur compound in a

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first solvent, b. mixing the first solution in which said organosulfur compound is dissolved with a second solution consisting essentially of said polymeric resins dissolved in a second solvent, c. coating a metallic substrate with the mixture of the solutions containing said organosulfur compound and said polymeric resins, d. curing the metallic substrate coated with said mixture of the solutions, and thereby increasing the corrosion resistance of said metallic substrate without using chrome.” Claim 12 has been similarly amended.

It is respectfully submitted that Kanai does not anticipate the above claimed subject matter as Kanai requires three-ingredient surface treatment compositions, whereas the presently claimed compositions consist essentially of two ingredients. The anticorrosive coatings of Kanai are described in Col. 2, lines 56-60 to “contain a compound containing a thiocarbonyl group and a water dispersible silica in an aqueous solution of water soluble resin but not containing substantial amount of a phosphate ion.” See also, Col. 2 line 64 through Col. 3, line 2 and the Abstract. However, Kanai does not disclose providing a composition consisting essentially of an aqueous resin and an organosulfur compound, which may be appropriately mixed in respective solvents. Accordingly, it is respectfully submitted that Kanai does not anticipate the claimed subject matter.

Claims 9-11 stand rejected under 35 USC §103(a) as being unpatentable over Kanai. As claims 9-11 depend from claim 1, it is respectfully submitted that these claims define over the cited reference, for the reasons stated above. Accordingly, it is respectfully submitted that Kanai does not render obvious the claimed subject matter.

In addition, the Applicants note the following with respect to claim 9. Claim 9 is directed to the use of ethanol, 1-propanol, 1-butanol and mixtures thereof as a first solvent. The disclosure of Kanai teaches that for those thiocarbonyl compounds that cannot be dissolved in water, such compounds may be incorporated into the anticorrosive coating after being dissolved in an alkaline solution. See Col. 5, lines 41-44. Kanai does not disclose, however, a method of using organic solvents to dissolve the thiocarbonyl group-containing compound. Rather, Kanai teaches that some organic solvents may be added into the aqueous resin solution in order to improve the film forming ability of an aqueous resin. See, Col. 6, liners 62-67. Accordingly, the

nature of the solvents of claim 9 for dissolving the organosulfur containing compounds, are different than those disclosed by Kanai.

Claims 3 through 4 stand rejected under 35 USC §103(a) as being unpatentable over Kanai in view of Thompson et al. U.S. Patent No. 4,684,507.

As claims 3 and 4 depend from claim 1, it is respectfully submitted that these claims define over the cited references for the reasons stated above. Accordingly, it is respectfully submitted that Kanai in view of Thompson do not render obvious the claimed subject matter.

In addition, the Applicants also note that Thompson is limited to an anticorrosive inhibitor containing both sulfur and amino groups. The disclosed inhibitor may be added to the corrosive media itself. See Col. 15, lines 9-17. The presently claimed subject matter uses a different approach of incorporating the inhibitor into a coating composition and subsequently applying the mixture onto a substrate surface to provide corrosion protection.

More specifically, Thompson teaches that the octyl thiol or dodecylthiol are used in combination with methacrylate and diethylene triamine (Examples 1 and 2) as reactants to provide a new compound, wherein the reactants undergo a Michael reaction. As seen in the structure shown on Col. 6, lines 5 and 24, the resultant compound contains both sulfur and amino groups. However, the methacrylate and the diethylene triamine are monomers and cannot be used directly as an ingredient of any coating composition. The monomers react with the thiol and they produce a new compound that contains both the sulfur and amino group.

In contrast, as presently claimed, a chemical reaction between the organosulfur compound and resin do not necessarily occur and a new compound is not produced. Furthermore, as presently claimed, the coating composition that contains the organosulfur compound and polymeric resin is applied to the surface of a metallic substrate and forms a coating layer to provide corrosion protection.

### **Provisional Double Patenting Rejection**

Claims 1-11 and 12-15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of co-pending application no. 10/786,379, corresponding to US PG PUB No. 2005/0186347 A1, in view of

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Thompson. The Applicants have noted this rejection and will file a terminal disclaimer with respect to co-pending application no. 10/786,379 once it is indicated that there is allowable subject matter in both applications.

Having dealt with all the objections raised by the Examiner, it is respectfully submitted that the present application, as amended, is in condition for allowance. Thus, early allowance is earnestly solicited.

If the Examiner desires personal contact for further disposition of this case, the Examiner is invited to call the undersigned Attorney at 603.668.6560.

In the event there are any fees due, please charge them to our Deposit Account No. 50-2121.

Respectfully submitted,

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